

# SUBTERRANEA BRITANNICA

SECRETARY'S NEWSLETTER NO 18

1997

Welcome to,

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Robert Cook, USA  
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M. Hankinson, Yorks  
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Richard Lambert, Leics  
R. McLachlan, Derbyshire  
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Audrey Peattie, Herts  
J. W. Shere, Cambridgeshire  
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A.D. Watson, Hants  
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David R. Dodwell, Yorkshire  
M. Ehrenfried, Hants  
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N. Harley, Bucks  
Mike Jackson, Bristol  
R.A.W. Longden, London  
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V. Stenhouse, Merseyside  
Angue Townley, Humberside  
Phil Waterton, Hants  
Andy D. White, Yorkshire

## Editorial

First an apology. This newsletter is late - your editor has been a little overwhelmed recently but his commitment to produce two newsletters a year will still be met.

With regard to the Bulletin, Paul Sowan, sole member of the editorial team, says that he is having production difficulties and members are still owing Bulletins for 1995, 1996 and 1997.

As the newsletter usually presents few production difficulties, your newsletter editor suggests that if you have articles which you would like to see in print within a reasonable length of time, that you send them to him for publication. The society needs to concentrate on the things it can do and an improved newsletter seems to be one way to do this. The chief problem in producing the newsletter is that hitherto it has not been possible to reproduce photographs of an acceptable quality. However one or two members now have high resolution scanners and in future it should be possible to overcome this and reproduce photographs to bulletin standards - although it must be said that the photos in some recent bulletins have themselves been of low quality.

Another feature of the newsletter is that it does not usually include original articles but this need not be so. Therefore please remember that I will welcome articles of any standard. They will be taken at face value and appear in the newsletter without alteration.

Our third publication 'Siren' is in the hands of Tex Bennett and is developing nicely.

To conclude. Thanks to all who have sent material for this newsletter and special thanks to the regular contributors.

## Duke of Portland's Tunnels

Some Sub. Brit. members will know about William Cavendish-Bentinck-Scott who lived at Welbeck Abbey in Nottinghamshire during the 19th century. He was a true eccentric and included in the various strange and inventive features he built in his garden was an extensive subterranean system. These tunnels were built by the cut and cover method in the 1860s and big enough for him to race a horse and carriage through just for his amusement. The system also includes an underground chapel and a huge underground ballroom.

Obviously much mythology has developed about the Duke, including the story that he was deformed by syphilis and liked to hide himself away, although occasionally jumping out to frighten people. But it seems more probable that he was just indulging himself in a bit of imaginative garden development.

The tunnels are still there and have stimulated author Mick Jackson to write a well reviewed novel, *The Underground Man* (Picador #15.99). Your secretary dreads the thought of the book becoming a best seller and causing the hoards to apply for Sub. Brit. membership.

## Underground New York

The National Geographical Magazine of February 1997 features an article, *Under New York*, by Joel L. Swerdlow and photographs by Bob Sacha. It is an interesting article with two fine cutaway illustrations, the one showing the various systems which exist under the city and the other relating the various levels to the city's geology. Its defects are that it is written in an unfocussed rambling popular style constantly referring to dangers. Some of the dangers men-

tioned are of travelling in subway trains where if you are assaulted in a crowded carriage you can rely on your fellow passengers to totally ignore you. If you are shot and someone does actually summons help you are likely to get sworn at for the inconvenience you cause.

The deepest tunnels are the water supply tunnels; a new one under construction, City Tunnel No.3 is being dug almost 700 feet below the surface. It is in hard rock; schist, gneiss and granite are mentioned. In the first place dynamite is used but later boring machines are lowered down. The men working on this tunnel are known as sandhogs and some are following a family tradition - some families have worked on New York's underground since the first subway at the turn of the century. The attraction is the very high salaries but the disincentive is the very high accident and fatality rate due to sadly avoidable accidents. An interesting theory is advanced that in the darkness of the tunnels the human pineal gland assumes that it is night and produces the hormone melatonin which is associated with drowsiness. (Does anyone know anything about this? I've never noticed cavers becoming unaccountably drowsy underground!.)

The article does not give the diameter of City Tunnel No. 3 but it looks from photo as being of larger than Channel Tunnel dimensions and it is already nearly as long. The pressure inside the tunnel will be very great when it is in use for it will help bring one billion gallons of fresh water daily to New Yorkers from the Catskill Mountains more than a hundred miles away. Riser shafts from the water tunnel will carry water to the sixth story of most buildings.

As in London there are plans to extend the underground railway system. Thus the 63rd Street Tunnel runs more than one and a half miles from Queens to midtown Manhattan and was opened in 1989. It goes under East River and was constructed by sinking 180 water-filled steel tubes in a trench dug in the river bed. The water was displaced with compressed air and workers inside then bolted the tubes together. The completed underground tunnel is in two levels and only the top level is currently used. The writer describes walking the empty lower level. Graffiti indicates that despite the depth of the tunnel (15 stories of steps to the surface) that it has been visited by vandals. The latest plans are to extend the tunnel to Grand Central Terminal 2 miles away. This connection is scheduled to be completed by 2010.

The article briefly mentions sewers which under New York appear to be as old and outdated as is the case in many towns and cities. When flooded with storm water the excess from the sewers is simply conducted by tunnel to the aptly named Flushing Bay. As an aside it is interesting to note that a similar system at our own Brighton, whereby in times of storm, crude sewage was ejected into the sea near the Palace Pier, has now been replaced - the excess sewage is now collected in a long tunnel under the beach and conveyed to a treatment plant. Perhaps New York also needs to be threatened with EU regulations!

People who dwell under New York are also considered, but this sort of thing and crime in general is on the decline due to the policy of 'zero tolerance'. If minor crime is clamped down on then major crime also declines. Never-

theless there is a fine photograph of Bernard Isaac at home in a cosy little lair in an Amtrack tunnel. He lived like this for 11 years and now complains that it was much more peaceful and quiet than his present apartment in Harlem.

More in Sub. Brit.'s line is a photograph of cavers exploring an old water tunnel. This was hailed as a miracle of engineering when built in 1842 but it was closed in the 1950s.

In the end the writer finds a truth; 'By now I have learned why I like being underground. To be cut off from the routines and concerns of daily life feels strangely safe. You disappear into yourself down here.'

#### And talking of sewers.

this article appeared in Chemistry and Industry 6 January 1997

Interested in dark, dank, smelly tunnels? Then the SEWER-LIST is for you. It's a free mailing list on which to share all your worries and hopes about storm sewers, sanitary sewers, lift stations and treatment plants. It has over 400 subscribers around the world. To subscribe, send the message 'subscribe sewer-list [firstname][last name]' (no quotes, and replace the bracketed text with the appropriate information) to the address below.

listproc@mcfely.cc.utexas.edu

#### Book Review

The Secret Sussex Resistance. Stewart Angell, The Middleton Press 1996 pp85 £10.95 ISBN 1 873 793 820

This book is the result of an inspired and intensive piece of research into the existence of a secret resistance organisation which was set up in May 1940 and disbanded on 18 Nov. 1944.

The organisation was simply known as Auxiliary Units and was to be activated in the event of a German occupation of the country. Small patrols would operate from prepared underground hides, stores and observation posts. from which they would report on enemy movements and commit acts of sabotage.

The individuals were mostly farmers, gamekeepers and others with country knowledge, who were given training in combat, concealment and the use of explosives. The training manual was disguised as copies of the Countryman's Diary for 1939.

The HQ of the Units nationally was at Coleshill House, Highworth, near Swindon, Wilts. and the Sussex Regional HQ was at Tottington Manor at Small Dole, West Sussex.

Stewart Angell started from a brief mention of the existence of the Units in 'Hailsham at War'. Given that official records will not become available until 2020 he has done a splendid job in tracking down the locations and details of all 25 Sussex Units. He has interviewed members who are still alive and written down anecdotes about their exploits, which included numerous mock sabotage attacks on Canadian forces stationed in the County.

In addition he has managed to locate many of the underground sites and includes grid references, plans and photographs. The culmination of this work was a reunion,

arranged through the author, at Tottington Manor and there is a photograph of this event.

There was no building standard to the underground hides. Their design and construction was left largely to the individual patrols who used locally available materials and took advantage of the local geography.

This is not the end of the story. Plainly there were other Units across the country and their story has yet to be told. In addition Mr. Angell has discovered that a completely separate network called the Special Duties Organisation also existed, with patrols and underground hides. This was based upon an HQ at Hannington Hall, Hannington, Wilts - just 5 miles away from Coleshill House. There is an Appendix giving some details of the Sussex part of this organisation.

It is to be hoped that military historians will be inspired by this work to extend its scope. It will certainly help to explain to future developers and historians the reason for the existence of curious underground structures which will turn up from time to time.

Harry Pearman

And from Star news, 5.9 1996 we read,

'A local man is trying to track down undercover members of a second world war secret army.

A former private in the Bath Cell, Ken Cleary wants to get in touch with the men and women who formed the Somerset Resistance during the war. In everyday life they were farmers, teachers, civil servants and market gardeners. But outside working hours they formed a top-secret organisation.

The undercover group had hideouts all over the area, including specially built underground bunkers and the ice-house at Prior Park College.

They were trained to blow up enemy bases and transport, to use Thompson sub-machine guns and pistols against the enemy and to make Molotov cocktails and booby traps. The idea behind the operation was to use local people's intimate knowledge of the area.

Nobody knew about this secret organisation until a few years ago and now Mr Cleary, from Clutton is trying to trace people living in Bath during the 1940s when he was recruited. He said: "I was working in the Admiralty, waiting to go into the services. I found that friends aged 17 and 18 were doing this undercover work and I said I was interested. So I was recruited. It was just done by a tap on the shoulder And I was in the GHQ Reserve 203 Battalion, Admiralty, Bath, for about six months. But it wasn't like Dad's Army. It was more serious than that."

The Admiralty hideout was meant to be at Battlefields, Lansdown, but the bunker wasn't completed before Ken was whisked off into the Royal Marines.

The job of tracing such a secret bunch has proved difficult and Ken would like any of the old Somerset members to contact him on 01761 452224.

## Book Review

Slate from Coniston. A history of the Coniston slate industry. Alastair Cameron, Cumbria Amenity Trust Mining History Society, 1996. (ii) + 151 pp. #7.50

Slate and allied fissile stones such as 'stone slates', flagstones, and the like have been worked, quite often mainly or exclusively underground, at numerous places in England, Wales, Scotland, the Isle of Man, and Ireland. Wide distribution as a building material, and thus intensive working, has depended on coastal quarries and coastwise shipping on the one hand, or on the development of a canals and railways network on the other.

Much has been published, over many years, on the North Wales slate industry, from numerous points of view. The Lake District quarries have been relatively neglected, other than R. Stanley Geddes' 'Burlington blue-grey' (an ambitious company-sponsored hardback on the slate quarries of Kirkby-in-Furness, published 1975 and 1991), and Ian Tyler's 'Honister slate' (1994.)

Alastair Cameron has for some years had papers published concerning slate quarrying at Honister, some 18 km northwards from Coniston, and short accounts of Lake District slate quarrying as a whole. We are fortunate in his having now produced a full-length book on the industry of the Coniston district, where he was born and with which he has maintained close connections ever since.

This is an excellent book. The Coniston quarries are considered in some detail, with much information for the centuries before the 19th century, gleaned from estate archives. The fortunes of the industry are related to the relevant external factors including Government taxation, and the development of canals and railways. There was some underground quarrying by the late 17th century, and evidence is presented to support the view that this was the precedent for similar operations in North Wales. The Lakeland system of quarrying by tunnelling into the hillsides and developing 'closeheads' (underground caverns) when good slate was encountered is explained. So is the curious and seemingly dangerous practice of 'open-topping' these closeheads, resulting in there now being fewer underground workings than there once were. How open-topping was actually done is not explained in detail. Why it was done, presumably, was to maximise extraction of good slate left in the vein between the closehead ceiling and the surface of the ground above. Numerous extracts from older Ordnance Survey maps and plans are presented, but no plans of underground workings. Upwards of 20 photographic illustrations are included, of which about half are 'historic' and half modern showing the exterior views of the quarries and the landscape in which they are set, as well as two modern underground scenes and a third such from the 1930s.

The one-page bibliography is disappointing, in that it cites only one pre-1960 work, along with numerous

secondary sources of a more or less popular nature published during the last 20 years. The late 19th century detail quoted in the text presumably was derived from HM Inspectors of Mines Reports under the 1872 Metalliferous Mines Regulation Act (and succeeding published material), although references to the published Reports and Lists are not cited. There is a one page 'glossary of terms' which includes such gems as definitions for 'bait', 'bate', 'clog', 'closehead' 'Mat Speddin-tunnel', and 'open-topping.'

A 32-page gazetteer provides details of over two dozen quarries, both open and underground, access levels, and associated transport routes.

Paul W. Sowan 22.12.96

### LONDON BELOW GROUND.

#### A HONEYCOMB OF TUNNELS

#### THE BURIED RIVERS By Our Special Correspondent

Explosions in subterranean passages and the bursting of water mains in various parts of London, apart from the loss and inconvenience they have caused, have drawn attention to the underground honeycomb of conduits, galleries, tunnels and borings beneath the city of various sorts and serving various purposes. Some of these tunnels carry hidden rivers, which rising in the suburbs, make their way through buried courses to the Thames. Others accommodate gas and water mains and cables of various kinds. The London County Council owns altogether some seven miles of these service subways, and the question arises whether it is desirable to extend the system considerably. Various explanations have been given for the large number of fractures recently in buried mains and pipes - change of temperature, shifting soil, and vibration caused by traffic being among them. Obviously pipes carried in a tunnel are less likely to suffer damage than those buried in the ground, while they are more easily repaired. The construction of a complete system of subways for all the buried pipes and cables under London, however, would be very costly, not to speak of the difficulty of co-ordinating all the interests concerned.

The underground rivers and springs contribute their share to the subterranean troubles of London. It was once a city of wells and spas and abundant water naturally lies or flows or bubbles below the surface, breaking out every now and again, as it has done recently at several points, through the discipline of pipes and conduits. Wells and rivers do not dry up conveniently at the behest of the builder, and if they cannot be disposed of they must be accommodated, and so used or diverted that they will contribute to his plans, at the worst, not to interfere with their execution. A stream develops its force from its persistence and though in itself it may be of meagre

dimensions it can become, by reason of its continual flow formidable to the builder. Thus, as was recently recorded in *The Times*, the entire area round about the Mansion House, which was built almost on the bank of the old Wallbrook, had to be piled, and even after that underpinning was necessary. Pumping is almost continuously carried on in the Poultry, opposite, where a well 49ft. deep collects the water. When a certain level is reached a pump automatically comes into operation and discharges at the rate of some 2,500 gallons a day into the sewer. Sixty years ago the building of the National Safe Deposit at the corner of Queen Victoria street was only made possible when the same brook had been harnessed. The London County Hall stands in a neighbourhood which was once a tract of marshland, with wells of medicinal water in the neighbourhood. It was built on a concrete raft 5ft. thick, but continual pumping is necessary to keep the foundations dry.

#### Ancient streams

When Lever House - then De Keyser's Hotel - was rebuilt in 1871 timber remains of the old Bridewell docks; were found in the foundations. These were relics of the days when the Fleet, the most famous of the hidden rivers of London, was stream of importance, carrying, considerable shipping and being a commercial highway.

The fields through which it flowed from Highgate to the Thames have vanished under streets and factories, and there are traffic and tumult where there were seclusion and peace. The Fleet meandered through Kentish Town and near Gospel Oak, and thence to King Cross. Holbourne, the name of its upper reaches, remains a modern place-name changed in spelling, but the old course of the river is indicated where Holbourne Bridge crossed it. From King's Cross the Fleet turned towards Clerkenwell Green and received, near the site where the Parcels Sorting Office now stands, the waters of a brook rising, as Mr. Foord has shown, near Russell-square. Its course then lay by way of Farringdon-road to the Thames, through Whitefriars, its mouth being west of Blackfriars Bridge. A sewer now encloses the river.

While the Fleet has a literature of its own, two humbler streams, the Tybourne and the Westbourne, flowing darkly under London farther west, bounded the manor of Ebury, as Mr. Gatty has recorded, on the east and west sides respectively; to-day they reach the Thames through a series of great pipes, and the course - if not the waters - of the Westbourne may be seen at Sloane-square Station, where it passes over the railway in a conduit, and so on to the outlet near Chelsea Bridge. Roughly, its complete course, taken back from that point, is across Chelsea Bridge-road, under the barracks, Holbein-place, Sloane-square Station, the Court Theatre, Cliveden-place, Little Cadogan-place, across Pont-street and Lowndes-street, through the Albert Gate, and under the Row into the Serpentine. On the other side it flows or flowed into the Serpentine at Marlborough Gate.

The Tybourne, another watercourse of the Hampstead and Highgate Hills, passes under

Oxford-street from the west side of Stratford-place, and so on down South Molton-lane across Brook-street, down Avery-row, across Grosvenor-street, and by a devious route under the garden of Lansdowne House and the Junior Constitutional Club. It is recorded that the stream once crossed Piccadilly under a substantial stone bridge, and passing through fields - now the Green Park - flowed across the site of Buckingham Palace, and then divided, one channel going to Westminster to drive a mill. The main stream crosses the Buckingham Palace-road and then goes under Palace-street Victoria-street, and other thoroughfares, flowing eventually for 220 yards due south between the buildings that face Carlisle-place and Vauxhall Bridge-road, after which it crosses that road and turns south--west down Tachbrook-street, and through what is now the London County Council drainage station into the Thames

#### A Northern Source

As if to emphasize the triumph of modernity over this ancient waterway an elaborate motor-coach station has been established close to its confluence with the Thames. The source of the Tybourne has been traced to the fields in Hampstead known as "Shepherds" or "Conduit fields." The spring was drained off early in the eighties by the tunnel which passes close by, through which the Hampstead (North London) railway passes. The stream followed the line of Fitzjohn's-avenue and skirted the west side of Regent's Park. Twice it crossed Marylebone-lane on its way towards Stratford-place.

The Walbrook was formed by several streams in north-east London which meet near Finsbury, five of them still flowing through sewers. It was at least partly covered over some centuries ago. Its outfall into the Thames is at Dowgate-hill, where in 1884 the remains of a landing-stage of Roman origin were discovered, and at other times various relics of the business once done on the Walbrook have been found.

In addition to the lost rivers of which the chief have been described, London once abounded in wells and spas; and without going back to the days of well-worship it may be recalled that Stow frequently refers to the many wells of drinking water in the streets of London.

Names are in daily use which locate the positions where some of them stood. Aldgate Pump is still a landmark. The "Roman Bath" near the Strand is a place of pilgrimage. The waters of Bagnigge Wells were widely advertised, and the gardens of the same name drew great numbers of holiday-makers. St. Chad's Well was another mineral spring of great popularity; while Sadler's Wells have a history both medicinal and theatrical. Children who play hide-and-seek in Kensington Gardens must bless St. Govor and the admirable place of concealment that the saint's well provides. There is still the Round Pond for the sailing of ships and the Serpentine for boating; but the streams by which the children of other centuries sported and gather wild flowers take now a dismal course where none may see them, and where the ripple of their waters is unheard.

As to the less romantic service subways of the London

County Council, it is possible to walk by way of the longest' of them from a point near the Mansion House to another near Westminster station. The route follows the line of Queen Victoria-street fairly closely and continues along that of the Victoria Embankment. The first part of it is under the roadway and the second part under the pavement. The total length of the tunnel is 3,430 yards. At intervals air and a meagre measure of light enter it through grills let into the roof - which is the roadway or the pavement - and one is glad of an electric torch to light the way. Under Queen Victoria street there are twin tunnels running parallel to one another which merge into one near the north end of Blackfriars Bridge.

This part of the subway system was opened in 1880. It carries gas mains, tramway, Post Office, and other electric cables, and pipes accommodating water for use in various hydraulically worked undertakings, but no water mains. At various points a mass of these pipes and cables pass out of the tunnel and into the soil to supply various districts.

During the war, when an aeroplane bomb fell near Cleopatra's Needle, one of the gas mains was fractured and a large piece of the bomb was found inside it. The gas, however, did not ignite, nor were any of the cables or pipes damaged. In the Thames floods a year ago a great quantity of water entered the tunnel, but it was pumped dry in a very few hours. The hydraulic power pipes just mentioned belonged to the London Hydraulic Power Company which has 183 miles of such pipes under the surface of London, the pumping stations being in Southwark, Finsbury, and Westminster. The water is maintained at an even temperature so that changes of weather do not affect it. It is employed to operate cranes, lifts, and hoists and in other ways. The most modern part of the service subway is under Aldwych and Kingsway and is generally more commodious than the section under the Victoria Embankment.

The London County Council has in all 19 subways resembling more or less closely those that have been described. They carry only a very small part of the great web of sewers, gas and water mains, and cables which serve London, and which in greater or lesser numbers lie buried in the soil not far below the surface of highways and subsidiary streets, so that the road plan of London is, as it were, repeated underground in terms of pipes and wires. Holborn is, for this purpose, a typical thoroughfare, and the proceedings of the official enquiry into the recent explosion are likely to be followed with close public attention,

This article was from an old yellowing newspaper cutting found in a drawer. The guess is that it was from The Times of 1928

## Book Review

Peter Wainwright, The mines and miners of Goathland, Bechole & Greenend, Industrial Archaeology of Cleveland : Cleveland Mining Series, 1996, 32 pp, no ISBN, #2.95.

Cleveland's iron industry has been the subject of much published research in recent years, but Peter Wainwright's interesting little booklet in the Cleveland Mining Series contains a substantial section (nearly half the 32 pages) devoted to the distinctly unusual underground workings for road metal (and perhaps some building stone) in the Cleveland dyke. This is a more or less vertical intrusion of fine-grained basic igneous rock (whinstone) which has been traced across country for some 31 miles from near Eaglescliffe Station (on the Stockton to Darlington railway line) to Fylingdales Moor, inland from Robin Hood's Bay.

Iron mining and iron works at Buber and Beckhole are described, in pages 31 - 32, and some coal workings (of interest in that Jurassic rather than Carboniferous coal was mined) near Goathland, in pages 31 - 32. But the main interest lies in the information provided concerning the 'widespread whinstone mining along the length of the dyke near to Goathland.' The sites dealt with are some 10 km inland, to the south-west of Whitby (served by what is now the North Yorkshire Moors Railway.)

The dyke, where mined, has a thickness of from nine to 13 metres, and is intruded into Keuper marls and Jurassic shales and sandstones. The booklet draws on local and secondary sources, and is frustrating reading in terms of any historical overview or geographical context. However, the descriptions of extant surface remains, of the mining methods employed, and of the associated transport arrangements are of considerable interest and value. It is stated that quarries were worked in the whinstone from at least as far back as 1803, for roadstone and some building stone. Robert Hunt's Mineral Statistics ... Part II for 1858 (Memoir Geological Survey, 1860) (a source not used by Wainwright) confirms that in that year Messrs. Artus & Co., and M. Waddington, were working whinstone at Egton quarries, near Whitby, for stone for buildings and the pier at that town; and that J. & J. Pierson, at the 'Whinstone Dyke quarry', were working 'blue basalt' used in the roads at Pickering. When underground working commenced is not at all easy to establish, but Wainwright cites a newspaper report of 1886 which refers to an accident (a roof-fall) in what is clearly an underground working subsequently known as the Schofield mine, at Greenend. Irritatingly, the booklet provides no national grid references, and only a handful of very sketchy sketchmaps. The site seems to be a kilometre or two south of Grosmont. Closure of the Schofield mine is assigned, vaguely, to perhaps the time of the first World War, or at some time in the 1920s. Undoubtedly, records exist somewhere, both locally and nationally, to establish this more precisely!

Considerably more detail, and an interesting diagrammatic cross-section, (but no location map!) is given for the Sil Howe (or Silhowe) mine, which seems to have been on

or near Goathland Moor. It is represented that at this location the whinstone dyke was at first worked as an open pit, until this had reached a depth of some 20 metres, at which point working a narrow vertical rock body downwards became problematic in terms of pit slope instability, and pit floor flooding (a steam engine had to be installed to pump water out.) Evidence cited suggests that mining was resorted to at some time between 1893 and 1903, perhaps in 1899. An adit was driven from lower ground to intersect the dyke, and on the whinstone being met with (some 40 metres below the open pit floor) mine galleries commenced eastwards and westwards within the dyke rock. Those in one direction (it is not clear which, in the absence of more precise details) suffered a serious roof fall in 1916, and were closed off (underground) the following year. But the Sillars face, in the other direction, is stated to be about a mile from the adit entrance which, allowing the stated adit length of 1770 feet, implies about a kilometre of galleries in that direction. The whole thickness of the dyke was not worked out at one go, as the fractured rock would not stand as a safe mine ceiling. Instead, two parallel tunnels were mined, with occasional linking 'eyes.' This left a substantial pillar of unworked stone between them. At intervals, internal slope shafts were made to facilitate access to and mining of two further parallel tunnels at an upper level, some 10 metres higher in the rock. As a final phase of extraction, parts of the intervening unworked rock (pillars between pairs of tunnels, and floors between upper and lower tunnels) were blown out to maximise output. Inclined shafts were also installed from the mine galleries to the old open pit for ventilation purposes. The geometry of all the underground spaces appears to have been designed to ensure the entire complex was self-draining. There is no mention of any of the large caverns, created by blasting out walls and floors, appearing at surface as crown hole collapses.

This mine appears to have closed c. 1951, and an interesting visit report to the abandoned working in 1975 is presented. A proposal, in December 1978, to reopen the mine as a tourist attraction was turned down the following month.

The author's use of geological terminology is suspect, as a he refers to the whinstone as a 'theolite' (presumably - tholeite), and speaks of mining into a whinstone sill (rather than dyke) at Greenend,

Additionally, there is 'evidence of a ganister mine at the roadside at Fair Head on the Grosmont road' - of interest, again, as a Jurassic rather than a Carboniferous ganister!

Whilst this booklet certainly contains much of interest, its compiler has neglected several obvious sources of more precise information. Oral history and local newspapers are used, but one assumes much detail could have been added by consulting the geological literature, and the Mine Inspectors' reports under the 1872 Metalliferous Mines Regulation Acts and succeeding statutes. Reproductions of parts of older editions of large-scale Ordnance Survey plans, and an overall location map indicating the alignment of the Cleveland dyke and principal places mentioned in the text would have made the booklet considerably more accessible for readers not familiar with the locality.

Paul W. Sowan, 15 December 1996

## Wisbech

Wisbech is a pleasant but rather isolated market town in the Fenland of north Cambridgeshire. In medieval times it was a port but subsequently silting up caused it to become separated from The Wash although the river Nene follows an artificial course through the town. It has interesting and attractive architectural features and is associated with Thomas Clarkson and Octavia Hill. Thomas Clarkson devoted his life to the campaign to abolish slavery and the Clarkson memorial is a prominent landmark in the town near the riverside.

Various local people are hopeful that tourists can be attracted to the town with a resultant improvement on the local economy. The town does presently have attractions such as the Wisbech and Fenland museum but not to the extent that it would attract large numbers of tourists. Sub. Brit. was approached for its views on the underground aspects of the town.

There is a local belief in the town that it is undermined by a series of tunnels, presumably brick-lined since the ground consists of silt. This is based on underground sites which available to be visited, collapses in various parts of the town centre which have been hastily filled without investigation and discoveries at building sites likewise hastily hidden and local anecdotes. It certainly would be rewarding to investigate this small town and Malcolm Tadd would like to hear from anyone interested in participating in the job. Meanwhile copy of a report issued follows.

Notes on an initial visit to Wisbech by Subterranea  
Britannica 3-4th December 1996

### Purpose of visit

Sub. Brit. was invited by R.G.S. Barnwell of the Wisbech Society and Preservation Trust Limited to view certain vaults and underground passages under the Old Town of Wisbech.

The Wisbech Society was concerned that the true extend of all the vaults and passages under the town was not known and that some were damaged and obstructed by various past work in the town.

Advice was needed on detecting, surveying and preserving surviving concealed underground structures since they constituted a potential tourist attraction. The invitation was backed by M.J. Swann in his capacity as President of the Wisbech and District Chamber of Trade and Jerry Harrel, architect.

Sub. Brit. representatives present, were Malcolm and Barbara Tadd (secretaries of Sub. Brit.), Sylvia Beamon, Tony Vine, Maurice Webber, Nick Catford and Vince Allkins, photographers

### Sites visited

These were Wine vaults under Rose and Crown Hotel, Wine Vaults at Clarkson Memorial, Vaults under Wisbech Castle and Cellars under Elgood's Brewery

The first three are to the east of the river Nene, which

splits the town, and are the ones which are relevant to this study. Photographs were taken underground.

### Wine vaults under the Rose and Crown

These brick-lined vaults are interesting but not extensive. Nevertheless conversation with the maintenance man at this hotel led us to believe that other vaults are likely to exist under this very old building. A gap in the brickwork at one place showed a silty loose fill behind the brickwork. We were told that work under the hotel revealed walls 5 feet thick.

### Vaults starting at the Clarkson Memorial

These are also brick-lined wine vaults and not extensive. Nevertheless they are 'atmospheric' and have potential as tourist attraction.

### Passages under the Castle Garden

The building known as 'The Castle was built by Joseph Medworth in 1816. It replaced John Thurloe's mansion which was built in the 17th century. The underground passages are in the garden behind The Castle under the area believed to be the site of Thurloe's Mansion. The passages are locally known as 'The Dungeons' and occupy a rectangular area. They basically consist of an extensive series of brick arches and have the appearance of the undercroft of a sizable building. In one part is a well but it is only a few feet down to the water.

Although visitors are often taken around these vaults which are particularly popular with young school children, the low height is a disadvantage as far as adults are concerned.

### Investigational work needed

1. Thorough document research to collect all references to underground passages.
2. Local memory to be tapped. Advertisements in local newspaper or reminiscences.
3. A large-scale plan of town centre where underground passages are likely to be should be drawn up. Existing underground passages should be marked on the plan and if no plans or only inadequate plans of these exist, then surveys (tape measure) should be undertaken. It will be easy to locate these passages relative to surface features on the large-scale plan
4. The large-scale plan will give an indication as to the position of possible concealed passages. Thought should then be given to electronic detecting techniques such as Ground Probing Radar. It is useful that the area of the town under consideration is a flat pedestrianised area.  
A Sub. Brit. member Joep Orbons is skilled in these electronic techniques and this report will be sent to him for advice. It could be a disadvantage that he lives in the Netherlands.
5. As well as electronic techniques walls should be probed in certain sites such as the Rose and Crown
6. Other members of Sub. Brit. will be contacted for helping with the project and an estimate of costs will then be prepared.

## South Crofty Tin Mine at Redruth in Cornwall

South Crofty Plc has circulated notes on a proposed Underground Working Awareness Course. Although intended to be for professionals, this intensive week-long course could still be of interest to the amateur mine explorers who abound in Sub. Brit. and who would not be deterred by the #300 plus VAT. South Crofty is now the only working tin mine in Cornwall and has already been visited by one or two Sub. Brit. members. The statement issued by the firm is as follows.

### South Crofty Tin Mine

South Crofty Tin Mine has now been continually worked for tin and copper since medieval times, an unbroken record of mining activity has been kept since 1670. During the 1830's the mine then known as East Wheal Crofty and producing copper, was the premier mine in the district. Later split into smaller units Wheal Crofty section was eventually to become the largest Cornish mine in history. By the end of the 1880's tin had once again become the focus of the persistent and skillful search by Cornish miners deep underground.

From a tiny operation about 100 feet long, less than 100 feet deep and working a single main lode during the reign of Elizabeth I, South Crofty Tin Mine has grown to almost 2.25 miles long; 3000 feet deep and has mined over 40 different lodes. South Crofty has already produced more ore than any other Cornish mine and deepening into new ore reserves is continuing today.

The present South Crofty Tin Mine is the result of the amalgamation of the adjacent South Wheal Crofty and New Cooks Kitchen Mine in 1899. 4 shafts are in use today, Taylors, Robinsons, Roskear and Cooks. Taylors and Robinsons shafts have no hoisting equipment and are used for ventilation only, Roskear shaft was sunk in the 1920's and recently brought into full operation as an access shaft after the installation of new winding equipment and headgear, it is also the main exhaust ventilation shaft with man riding capability. Cooks shaft is the main working shaft at the mine hoisting men, materials and over 4000 tons of ore per week from a depth of 420 fathoms, sunk in 1907 Cooks shaft with its distinctive modern headframe, is one of Cornwall's deepest vertical shafts.

Despite the benefits of modern technology and the unrivalled mining skills of the workforce, extraction methods at South Crofty remain remarkably similar to those used by previous generations of Crofty miners. Even today Cornish tin mining remains a physically demanding and labour intensive business.

### Book Advertisement

Dear Sir/Madam

J A Buckley  
25 Carn Brea Lane  
Pool  
Redruth

Cornwall  
TR15 3DS

Re: SOUTH CROFTY MINE: GEOLOGY & MINERALISATION

Following the success of the mining photograph books South Crofty: Underground and Geevor Mine Underground (soon to be joined by Wheal Jane: Underground), we are pleased to announce the release of SOUTH CROFTY MINE: GEOLOGY & MINERALISATION by N.G. LeBoutillier. This 32 page book, with a four colour cover and frontispiece, is an authoritative account of the geological background to the south-west's geology, as well as a clear description of the mineralisation of the last surviving tin mine in Europe. The district around South Crofty is also put into perspective.

Nick LeBoutillier has worked as Mine Geologist at South Crofty for several years, after teaching geology and geography to 'A' level at Camborne School. He is a geology graduate of the University of Wales and a Member of the Geological Society.

The book will sell at £2.95 and will be available to retailers (shops & museums) at a third discount. Individual NAHMO members can obtain copies, post free, at the reduced rate of £2.50 per book by sending a cheque for three or more copies.

Please make cheques payable to J A Buckley at the above address.

I look forward to hearing from you.

J A Buckley

### Richard Trench

The author Richard Trench, who with Ellis Hillman, wrote *London under London*, has died of a heart attack. He was only aged 48.

He was a journalist, traveller, adventurer and a fighter for social justice a combination which brought him into dangerous situations. His books on London reflected a view that we live in an unknown and uncontrollable world.

### Tunnels at Bowood, Ewell House Grove, Ewell.

We were asked by Dinah Saitch of Surrey County Council Planning Department to investigate a series of tunnels under part of Ewell which can be presently entered in the gardens at Bowood. The owner of Bowood was very cooperative and interested in our activities. Notes were taken and on a subsequent visit Nick Catford took high quality photographs. The very simple plan which we were provided with was checked and it was confirmed that the tunnels were accurately positioned relative to the roads above.

Basically there is a simple system of carefully shaped straight narrow tunnels dug in the soft sand stone not far below ground. Sometimes these are brick-lined but sometimes not. They are described in Chelsea Speleological Society (CSS), Records Vol 3, 1963. Our observations



confirmed those of the article.

We had no difficulty in concluding that the tunnels were originally service tunnels to the former Ewell House. It was customary for the lower classes to be kept out of sight of the upper classes last century. Servants were not permitted to sully the view from the front of the house and would therefore enter the house and grounds by tunnels and emerge in the kitchen area.

Although it is possible to find other examples such tunnels, notably Petworth House, they are quite rare. The whole subject of physical class separation in the 18th and 19th century needs researching. At the very least these tunnels should be very carefully surveyed and comprehensive records made.

No part of the system conforms to any ice-house we have ever found.

Usually underground systems have been modified by later uses than the one they were originally dug for. This is certainly true of the Ewell tunnels and we are inclined to agree with a suggestion in the CSS report that a hobbieist has been at work modifying and ornamenting the tunnels. Evidence of WWII air raid shelter was also found

#### A Tunnel at Ewell

...my mother who was born in 1898, used to tell me about the underground passage in Epsom High Street which ran from the New Inn (where Charles II stayed when 'taking the waters' at Epsom Wells) to Nell Gwynne's Tea Rooms opposite the town clock which is now a jewellers.

From Local Guardian 9.1.97. Sent by Bruce Osbourne

#### The Wemyss Caves.

The caves and cave markings at Covesea at Moray Firth on the east coast of Scotland were described in Secretary's Newsletter 17. This article describes the Wemyss caves which are further south on the coast of the Firth of Forth. The information is extracted from booklets published by the Save Wemyss Ancient Caves Society and sent in by Val Bannister.

The name Wemyss is derived from weems which is itself derived from the Celtic Uaimh meaning a cave. The caves are on two levels the lowest 25 feet above sea-level and the higher at 50 feet. They are in the sandstone sea cliff face and the lowest were formed by the action of the sea 6000 - 7000 BC and the higher 3000 - 4000 BC after the land had risen. It is claimed that there are more cave markings in these caves than in all the other caves in Britain put together. They are considered to be Pictish symbols and pictures. The first person to devote scholarly attention to the symbols was Professor James Young Simpson who is more famous for being the first person to utilise chloroform as an anaesthetic.

Since Simpson's time these small caves have been subjected to all sorts of destructive forces mostly due to human thoughtless or malicious activity.

The caves are confined to a very small area and moving west to east along the shore line the caves are, or were;

1. The Michael Cave.

This was discovered near Michael Colliery in 1929 but filled almost immediately although some wall markings were recorded.

2. The Glass Cave.

In 1610 a glass works was established in this cave which was not a very good business plan, although one way or another the works survived until final bankruptcy in the next century. The activities of Michael Colliery destroyed the cave in 1901.

3. Court Cave

There are all sorts of legends about this cave perhaps the best being that the Barons Courts met here instead of in the open which was the normal practice in the middle ages. The court was presided over by the local land owner who was responsible for local law and order. People from Reigate should take notice since no-one knows why their cave is called the Barons' Cave.

This cave is also said to have contained a holy well and the ghost of a refined lady who eventually became destitute and died of shame after being officially whipped for stealing. She was of course innocent - it was really the gipsies who did it.

4. The Doo Cave

Pigeon houses are called doocots in Scotland. Two adjacent caves were adapted as doocots but the west one collapsed during WWI after a gun was fired from a battery built above it. The other doo cave East Doo Cave can still be entered.

The reason for keeping pigeons was as a winter meat - for the rich and powerful only.

5. The Well Caves

This is a group of three caves. Of them the Fern Cave has disappeared under sand and soil and the other two are really one double cave. The well is in the double cave and was worshipped by the Picts. The later Christians called it St. Margaret's Well.

6 An unnamed cave

7. Jonathan's Cave

Jonathan was an 18th century nailmaker who occupied the cave with his family. Sometimes nails come to light but this form of nail making died out after more modern methods were introduced by the Carron Iron Company. There are more markings in this cave than all the others put together.

8. The Sloping Cave.

This is in an old quarry and difficult to find.

9. The White Cave

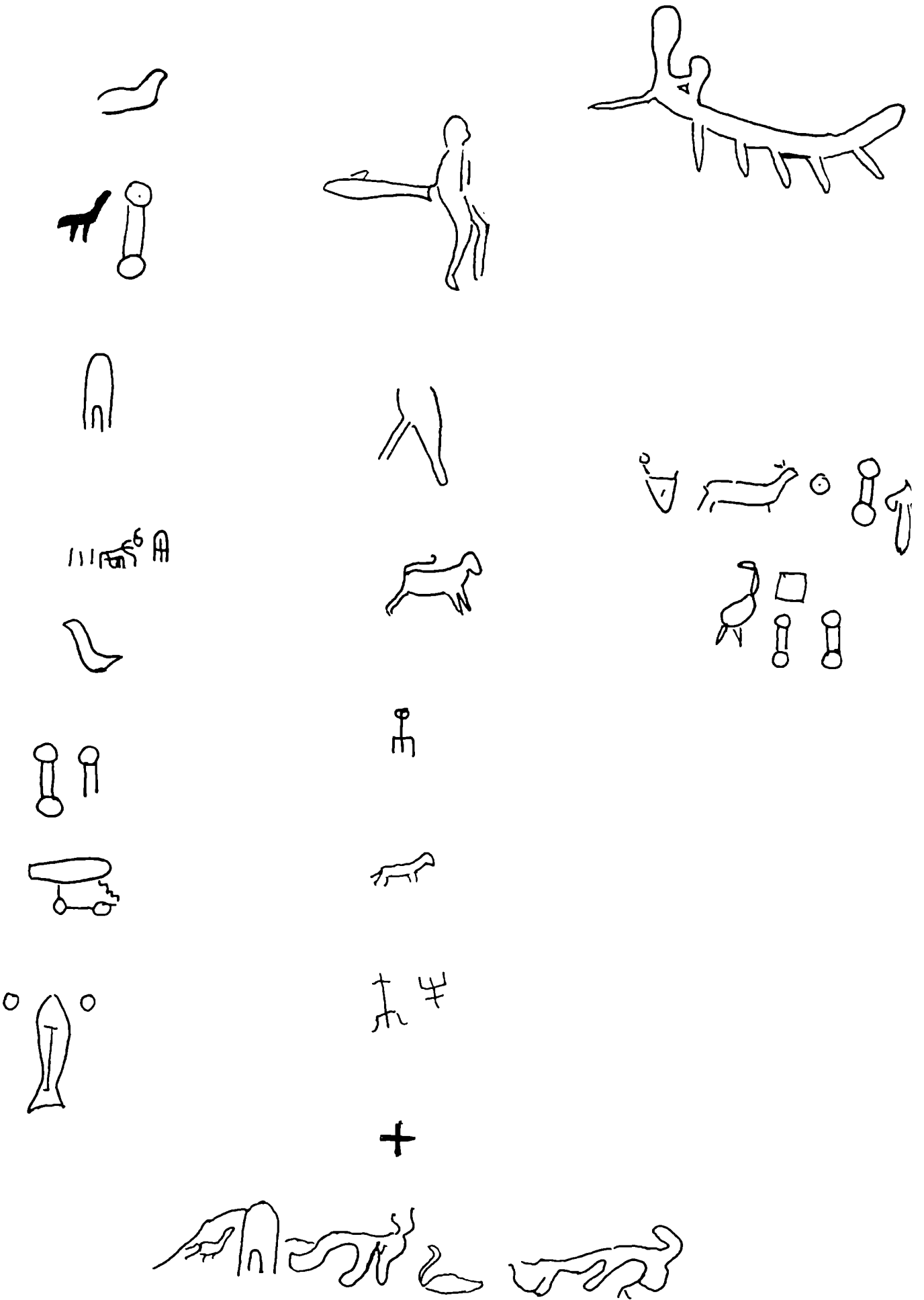
This is also in the quarry but has disappeared since the last century

10. Gasworks Cave.

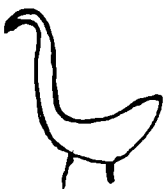
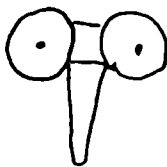
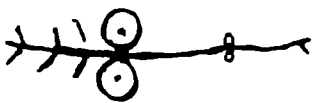
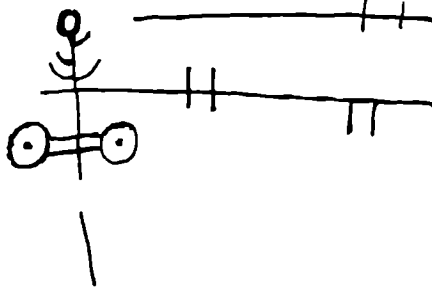
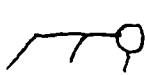
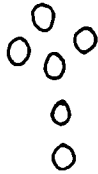
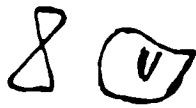
This was discovered during the construction of a gas works in 1860.

If you would like to join or communicate with Save Wymss Ancient Caves Society your editor has information.

Wall Markings in Jonathan's Cave

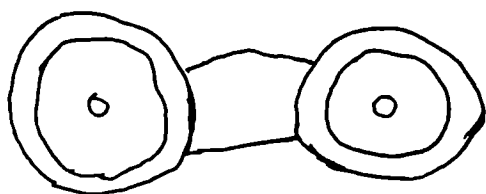


Wall Markings in Court Cave

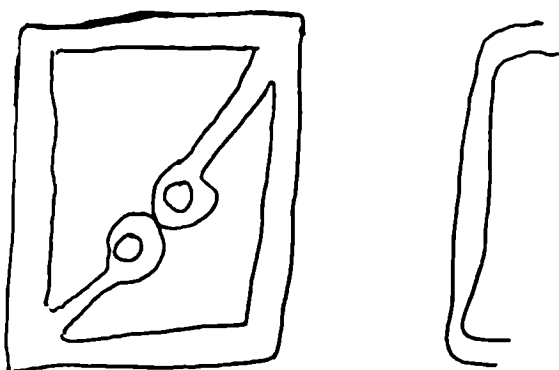




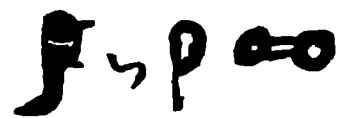
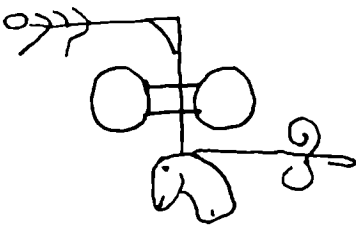
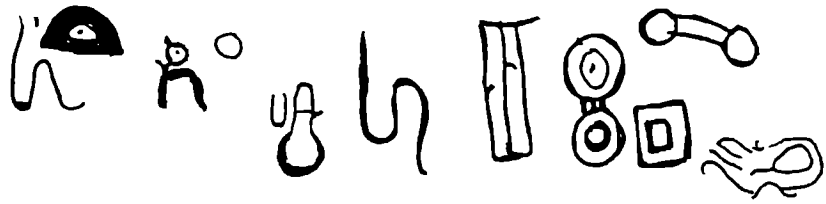
Wall Markings in Michael's Cave



Wall Markings in Sloping Cave



Wall Markings in Doo Cave



## Book Review

### Chislehurst Caves, Dr. Eric Inman, Kent Mushrooms Ltd, 1996. 13pp

The themes developed in the book are as follows.

Chislehurst is to be found in suburbia south of London. It became fashionable after Napoleon III settled there in disgrace after losing the Franco-Prussian war in 1871. However an outcrop of chalk has been worked certainly back to medieval times. For this reason the present century has inherited a complex maze of underground passages which is an amalgamation of three once separate series of chalk mines. Chalk was extracted not only for the production of lime by burning it but also for flint. Flint was used in building construction but also provided gunflint for flintlock muskets. The relatively small-scale capacity of these mines meant that they were not worked after the coming of the railways following which large scale chalk extraction in other places became economic.

Chislehurst became accessible by rail in 1865 and various scientists and geologists took an interest in the mines. However by 1903 they were neglected but in that year William Nichols, Vice-President of the British Archaeological Society, expounded a theory that the three separate mine systems were dug by the Romans, Saxons and Druids respectively. This was hotly disputed by other archaeologists but the ensuing national debate highlighted the tourist potential of the mines. By that time the cave entrances were in the grounds of the Bickley Arms Hotel whose licensee exploited the entertainment potential to the full. He even managed to procure a music licence.

Shortly after this the hotel and caves were acquired by Trust Houses Ltd. which was a national group of companies operating for public benefit rather than enriching its directors.

During the 1914-18 war there was a massive increase in production of munitions at Woolwich arsenal which caused a demand for storage places. Thus the caves were adapted for such storage which was not discontinued until 1920. The advantage of the caves was that they were near a railway and also in the event of an accidental explosion minimal damage would be caused locally. ( Readers should note, another such munitions store with similar advantages were the caverns on the east side of Tunnel Road, Reigate.)

In the inter-wars period the caves were used for mushroom growing by Kent Mushrooms but this ceased after war was declared.

The most eventful period in the caves history started with the bombing of London in September 1941. An amateur committee converted the caves to air raid shelters for fifteen thousand people in a few weeks. Although the authorities were at first horrified by this action such was public support, fame and the success of the shelter that it was granted official status in November 1941.

Mushroom growing was not a success after the war but the visitor potential was developed and at one time the caves became a place of popular music entertainment.

Mary Mills writes,

I have been sent a copy of 'Chislehurst Cave. A short history' by Dr. Eric Inman (Published by Kent Mushroom, no cover price available from the book stall in the caves.)

When I was a girl the Chislehurst Caves were where the wilder elements of Gravesend youth went to rock the night away. These days there is a tidy cafe an 'interpretation area' and two ex-heavy metal enthusiasts to tell punters about the horrors of it all. A number of people have tried to tell the history, of the caves beyond the Gothic elements more obviously on show. Eric Inman has had a very good try at doing this although he relates, uncritically a number of stories including the that anyone who stays overnight alone in the caves will die of fright! There is generally a lack of information about his sources. He gives some detail about the caves use as an air raid shelter - already covered in great detail in other works. What I would like to know more about is the use of the caves as an industrial site and Eric Inman says very little about this. If I am to be persuaded that the caves were not built by the druids for human sacrifices then I would like some detail of what really went on down there.

I looked briefly at what else 'serious' material I had at home on the caves to see how it compared. Chelsea Speleological Society covered it in Records Vo1 6 (no date but early 1970s. Available from Harry Pearman). This gives in full the, illicitly taped, commentary given by the official guide to tourists. I can see their reasons for doing this was so they could pour derision on it. They do in fact point out the errors in it but without much in the way of additional research which would give an alternative view. I am however sure that Chelsea Speleological Society, Kent Underground Research and Subterranea Britannica have covered the caves seriously in publications which I have not seen. I would however like to recommend to GLIAS members and Eric Inman, the Kent Underground Research Group's serious account of the Chislehurst Caves as an industrial site in 'Kent and Sussex Underground.' ( Meresborough #5.95)

## Bath

Over the years we have been fortunate in having Brian Clarke and Owen Ward to give us news of developments in Bath, a city in which they both reside.

The following letter was received form Brian in January and mentions a milleneum project for the abandoned Come Down Tunnel, the latest news of the fiasco of the Combe Down Mines, a milleneum bid for an underground village at Radstock, activities at Monkton Farleigh and the most amazing proposal of all - the recreation of a complete Roman city underground at Monkton Farleigh.

The spoof newspaper cutting describes the tunnel project.

Dear Malcolm

I have pleasure in enclosing a copy of the SD3M Milleneum Bid for Combe Down Tunnel, which is for use and

retention by Sub Brit as an interested organisation. Please note that Sub Brit could be invited to participate should the bid proceed further. I would be happy to hear from any interested members. This opportunity to have input to the opening of a presently closed underground space would assist its being made available for the use and benefit of all people.

The Combe Down railway tunnel has been welded shut at both portals for a considerable number of years now. It was cut open temporarily in the autumn of 1996 to permit a "walk through" inspection. This showed the bore to be in superficially good condition with no sign of anything falling from the roof. No arrangements have yet been made for more thorough professional surveys, which would be required as the bid went forward.

Local newspaper reports in early November of 1996 said B&NES Council were considering a draft cost analysis of a #29 million scheme to shore up Combe Down Mines. It was confirmed that English Partnerships "no longer looked likely to fund the scheme" and that local residents "would like to see a fresh approach". A firm called Ecotec was still working "to show the Government the scheme to stabilise the mine represents good value for money". This splendid "cost benefit analysis" was costing #25,000. In what looks like desperation, local people were touting (the newspapers description, not mine!) an underground heritage and industrial archaeology museum as a way to attract private funding for stabilisation work. Electric vehicles were proposed to ferry tourists from Prior Park Gardens (built by Ralph Allen) to the mines where stone for some of Bath's famous architecture was won.

Cllr Jeff Manning gave this scheme a cautious welcome, saying he "had a similar idea 10 years ago" but adding the attraction would have to be modest, as "too many tourists could cause problems".

This remark seems to have nailed down the lid on the proposal, since as of late January 1997 the subject has gone silent again. Meanwhile, B&NES Council has been in financial torment trying to find enough cuts in all departments (up to 20% all round asked for) to meet this years draconian new budget limits. Not much prospect there of finding the odd £ 29 million in loose change overlooked behind the sofa cushions, to be used for mine infilling.

During October of 1996, local press reports said environmentalist Gareth Morgan and architect Paul Richards were promoting a Millennium Bid for an underground village, or "all-year-round resort" near Radstock. Bath-based charity Somerdown Foundation of Oldfield Park was involved in the #10.5 million scheme which would be modelled on a biosphere. This closed system would generate its own oxygen through the growth of plants and algae and recycling of all waste and water. I have subsequently heard this bid competes in the same round as that for Combe Down Tunnel, which in comparison suddenly looks contrastingly quite safe and practical.

In my report on Monkton Farleigh Depot in Newsletter No 17, "trunking" was changed to "bunking" which completely alters the meaning. I was referring to old air conditioning bunking, which was metal box section sus-

pending under the roof throughout the establishment and connected to extensive plant for drying and heating air both above and below ground when the system was operational. Readers could have been puzzled by the error in print. I cannot myself imagine what "bunking" might be.

Newspaper reports in October of 1996 described an accident on Main West slope shaft in which a worker fell from the forklift truck he was attempting to drive down the shaft, only weeks after a motorcycling job broke his leg when losing control in attempting ascent of 20 District slope shaft. The forklift driver was winched out by a fire rescue team with his back-injured and then air lifted by police helicopter to the Royal United Hospital in Bath. Apparently the forklift overturned and crashed against the wall. It had just been delivered to site and was to work underground assisting renovation of the depot for use by Wansdyke Securities.

The depot is now in use and secure, with intruder alarms which can be heard going off from time to time. Main East haulage and associated slope shaft are retained as an emergency exit only, with a new wall and pedestrian access door built at the summit of the slope. No use will be made of the old railway equipment. Cambridge-based businessman George Backhurst was complaining in the press during October that he "rues the day that he bought the underground site" and that it had "proved to be one big white elephant". He acquired the complex eight years ago and has only recently managed to interest Wansdyke in having part of it on a ten year lease with purchase option. Suggested new uses had included a mushroom farm, heritage centre, theme park, waste dump (which we must yet remain vigilant against) or fine wine and art store.

A December report was once more trumpeting the "plans to recreate a complete Roman city on a five-acre underground site" at Monkton Farleigh (actually 20 District). The aim is to have the world's most detailed reconstruction of life 2,000 years ago. The project is to involve some of Europe's top historians and is to attract up to 750,000 tourists each year. It is to be called "Aque Sulis - The Secret City", which latter part was the exact promotional title of the former military museum. Apparently, the idea was hatched seven years ago when Stephen Weeks, founder member of the Monumental Trust, was asked to prepare a paper on the re-use of listed buildings in Bath. His work pointed to "a need for more recognition of the City's Roman roots." And guess what - yes - it is to be yet another Millennium bid. Pause for applause. There is more detail but I feel it would be wasted space here other than to record the comment of a Council officer that "it would not be appropriate for the council to comment on planning aspects at this stage."

We should be more interested (concerned) by the overheard remarks that 19 District could be back filled to create a barrier between the Roman bit and the Wansdyke bit. Lots of potential to make money there, nod, wink, know what I mean. Keep the nobby suits, hammers and chisels on standby for Sub Brit environmental Direct Action assessment teams, is my recommendation. I shall be looking out for any dead bats, at least. They do not like leaking chemical drums, so I have been told.

## Millennium bid to open up mile-long underground route comes to fruition Citizens celebrate tunnel transformation

**By Jill Burrows**

Several thousand Bath and North East Somerset citizens and visitors celebrated the inauguration of Bath's transformed Combe Down Tunnel last night, the Millennium's New Year's Eve.

The mile-long railway tunnel, part of the former Somerset and Dorset Railway, has been restored for use by walkers, cyclists and people with disabilities, with the help of a big grant of National Lottery money from the Millennium Commission. It passes deep under the hill-top suburb of Combe Down on the outskirts of Bath and connects Widcombe, a few minutes' walk from Bath city centre, with countryside at Tucking Mill near South Stoke. Thus it unites Bath City and Wandsdyke District, the two parts of the unitary authority formed in April 1996.

The great Millennium party was hosted by SD3M (the Somerset and Dorset - "Slow and Dirty" - Sustainable Development for the Third Millennium Community Group) which has carried out the project. "Slow and

Dirty" was the affectionate nickname of the Somerset and Dorset Railway, part of the area's industrial history. One section of the tunnel has been left blackened with smoke and soot.

Visitors were able to see the computer-controlled lights, CCTV and alarm system and security gates, the 3-metre-wide asphalt pathway, drainage systems, the tawny natural Midford sandstone around them and a new chamber with exhibits on historic stone mining.

Transformation of the tunnel and improvement of three miles of approach paths to the North and South has taken just under two years. As well as funding from the Millennium Commission, support was provided by Bath and North East Somerset Council (B&NES), the Countryside Commission, the EU, and several large companies. The SD3M Trust has also raised money from local businesses and individuals and from other charitable bodies. Wessex Water plc owns the tunnel and its approaches. B&NES and SD3M jointly pub-

lish a leaflet as a map and guide to the scheme, showing how it links with the National Millennium Route, the River Avon path and B&NES "People Paths" trails network now under development.

The tunnel offers a recreational experience unique to Britain, being far longer (at 1 mile and 129 yards) than any other public pedestrian tunnel in the UK. The track curves and crests a hill within the tunnel, so neither end is visible from the middle. Security CCTV linked to Bath's city centre system is installed. The tunnel will be closed at night times.

It is expected to be heavily used by walkers at weekends and can be reached from central Bath without the need to approach by car. It is also expected to be popular with many commuters living south of Bath, as it offers a traffic-free cycle route which avoids the barrier of the steep hills over Combe Down, such as the notorious Brass Knocker Hill. The short Devonshire Tunnel to Oldfield Park was opened earlier in the same scheme.